

REMARKS

The present Amendment is in response to the Office Action of April 8, 2004. Filed together with this response is the required petition and fee for a three month extension of time. Favorable reconsideration is kindly requested in light of the foregoing amendments and the comment which follow.

Applicants acknowledge the Examiner's comments on the claims readable upon the elected species, and do not traverse the Examiner's position at this time.

Claims 1, 3 – 9, 14 – 19, 26 – 28, 33 – 38, 50, 53, 60, 65, 77, 80, and 82 – 83 have been rejected under section 103(a) as being obvious over the patent to DiGiovanni. This rejection is respectfully traversed in light of the foregoing amendments, and the comments below.

A major advance according to the present invention is the discovery that with larger diameter fibers, polarization mode coupling can be minimized and thus polarization-maintaining behavior can be achieved with even small values of birefringence or stress producing regions. Thus, simple circular cross section stress producing regions are sufficient, and further, these regions may be located at relatively larger distances from the fiber core.

This above-described configuration also contributes to a reduction in asymmetric stress on the core. Asymmetric stress highly distorts the single mode beam profile from a multimode fiber. A preferred arrangement of the invention involves the propagation of single mode beam within a multimode fiber with good polarization discrimination; this objective simply cannot be obtained with the prior art configurations exemplified by DiGiovanni.

DiGiovanni, in contrast, relies exclusively upon non-circular or asymmetric stress producing regions to obtain polarization maintenance, and further does not even make mention of the size of the fiber. Accordingly, it is apparent that the effect of larger diameter fiber in reducing polarization mode coupling was unknown to DiGiovanni. At the limit, the larger diameter fiber permits polarization maintaining behavior even in the absence of birefringent regions or stress producing rods or the like (see, e.g., Fig. 5(a)).

Further, the ability to locate the stress producing regions relatively far from the core is a key advantage in multimode fiber, in that such fiber is particularly susceptible to mode distortions if the core is close to the stress producing areas. Clearly DiGiovanni includes no appreciation of this effect, or the advantages achieved through use of the invention.

Applicants appreciate that the Examiner has considered the fiber size to be an obvious matter of optimization, citing *In re Aller*, etc. However, *Aller* is not relevant in the present context. This case and others in the same line hold that optimization of a *known result-effective variable* is an obvious endeavor. In contradistinction, fiber size has never before been recognized as a result-effective variable for polarization mode coupling (or polarization mode dispersion). Accordingly, it cannot be said that the discovery of this relationship by the present inventors represents an obvious advance. Similar comments may be made regarding the relationship between the level of birefringence necessary to achieve polarization maintaining operation, and fiber diameter.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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